AQUAZONE

# Programmable Digital Thermostat

- Dual Setpoint
- 5+1+1 Day Programmable
- 3 Occupied, 1 Unoccupied
- Very Easy to Program
- Large, Easy To Read Display
- Thermoglow™ Backlight
- No Batteries Required
- Auto Changeover
- Energy Saving Smart Fan
- Locking Keypad
- Override Button
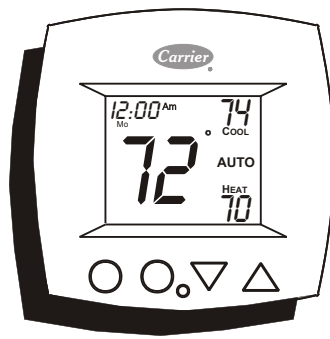
• *Includes Locking Cover*

**Meets California Title 24**

**Designed for Commercial Water Source Heat Pumps**

Carrier®

Commercial Systems & Services © Carrier Corporation 3/00
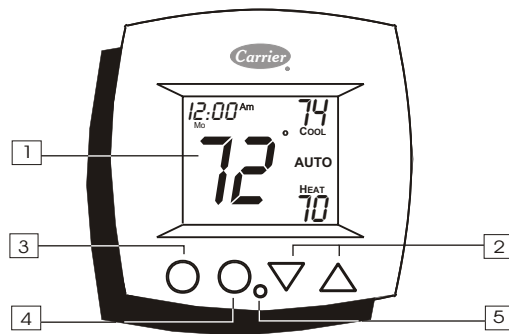
## Table Of Contents

⚠ **CAUTION**

Follow *Installation Instructions* before proceeding.

SET THERMOSTAT TO MODE "OFF" PRIOR TO
CHANGING SETTINGS IN SETUP OR RESTORING
FACTORY DEFAULTS.

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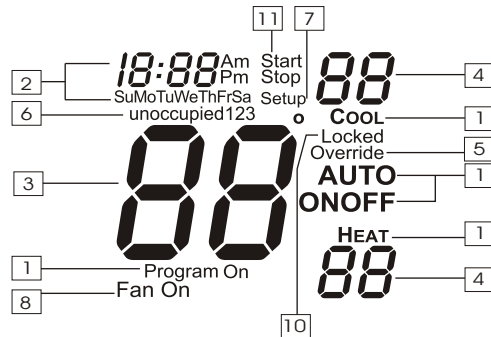
**P/N 50QE900-511WS**

## Front Panel



| 1 | **Liquid Crystal Display**<br>*with Thermoglow™* |
| 2 | **Up/Down Buttons** |
| 3 | **Mode Button** |
| 4 | **Override Button** |
| 5 | **Heat or Cool Indicator**<br>Heat = Red,  Cool = Green |

```
      11  7
 18:88 Am Start   88        4
       Pm Stop
 SuMoTuWeThFrSa Setup       1
 unoccupied123   o  COOL
                    Locked   5
                    Override
 88                 AUTO      1
                    ONOFF
                    HEAT      1
                    88        4
 Program On
 Fan On
      10
```

1  Mode Indicators
> Selects the operation mode of the equipment.
>> **HEAT** - indicates the heat mode.
>> **COOL** - indicates the air conditioning mode.
>> **AUTO** - indicates the system will automatically changeover between heat and cool modes as the temperature varies.
>> **OFF** - indicates the entire system is turned off.
>> **PROGRAM ON** - indicates the stored program is enabled to run. *Page 8.*

2  Clock with Day of the Week
> Indicates the current time and day. This clock is also used to program the timer periods. *Page 13.*

3  Room Temperature Display
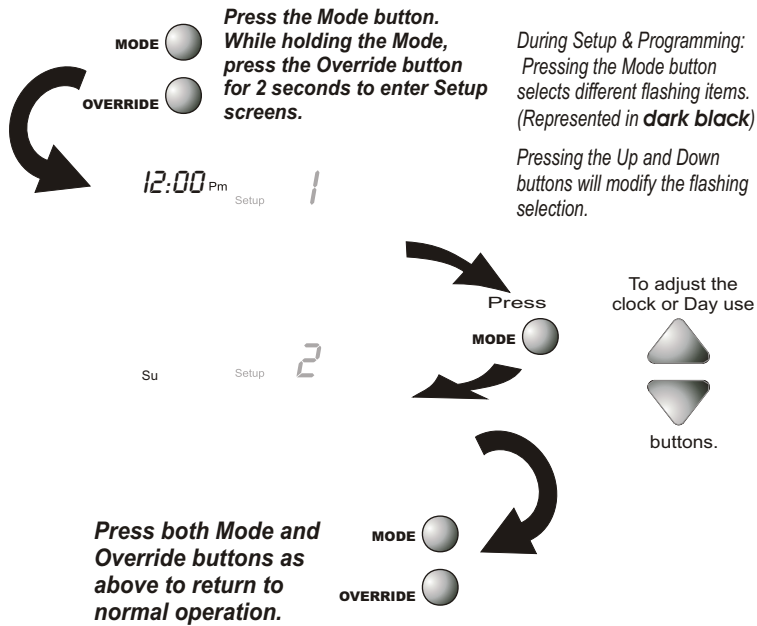> Indicates the current room temperature.

4  Desired Set Temperature
> Indicates desired room temperature(s). *Page 7.*

5  Override Indication
    Indicates the current program is currently being
        overridden for up to 4 hours.  *Page 7,17.*

6  Occupied or Unoccupied Indication
    Indicates the program number: Occupied 1,2,3,
        or Unoccupied.  *Page 8-12.*

7  Setup Indication
    Indicates the thermostat is in the programming
        mode.  *Page 13.*

8  Fan Operation Indication
    **Fan On** - indicates constant, continuous fan
        operation.
    When **Fan On** is not lit - indicates the fan will
        only operate when necessary to heat or
        to cool.  *Page 13.*

10  Locked Indication
    **Locked** appears after the right combination of
        buttons are pressed,  rendering the buttons
        inoperative. *Page 19.*

11  **Start** / **Stop** Indication
    Start or Stop appears when programming
        timer functions.  *Page 9.*

MODE

OVERRIDE

*Press the Mode button. While holding the Mode, press the Override button for 2 seconds to enter Setup screens.*

*During Setup & Programming: Pressing the Mode button selects different flashing items. (Represented in **dark black**)*

*Pressing the Up and Down buttons will modify the flashing selection.*

12:00 Pm  Setup  1

Press

MODE

To adjust the clock or Day use

buttons.

Su        Setup  2

*Press both Mode and Override buttons as above to return to normal operation.*

MODE

OVERRIDE

The thermostat is preprogrammed from the factory to operate 1 or 2 Stage equipment  without the need for further programming.  To optimize the installation of this thermostat follow the instructions in the Advanced Setup section.

Page 5

## Basic Operation

### Select Mode

The **HEAT** setting indicates the temperature the room has to reach before the furnace will turn on to heat the room.

12:00 Pm
Su
70°
HEAT
69

Press
MODE

The **COOL** setting indicates the temperature the room has to reach before the air conditioner will turn on to cool the room.

12:00 Pm
Su
72
COOL
70°

Press
MODE

**AUTO** will automatically select heat or cool based on room temperature demand.

12:00 Pm
Su
72
COOL
70°
AUTO
HEAT
69

Press
MODE

**Program On** will activate the stored timer operation. (occupied & unoccupied periods.)

12:00 Pm
Su
occupied 1
73
COOL
70°
HEAT
70
Program On

Press
MODE

**OFF** indicates both heating and air conditioning systems are turned off.

12:00 Pm
Su
70°
OFF
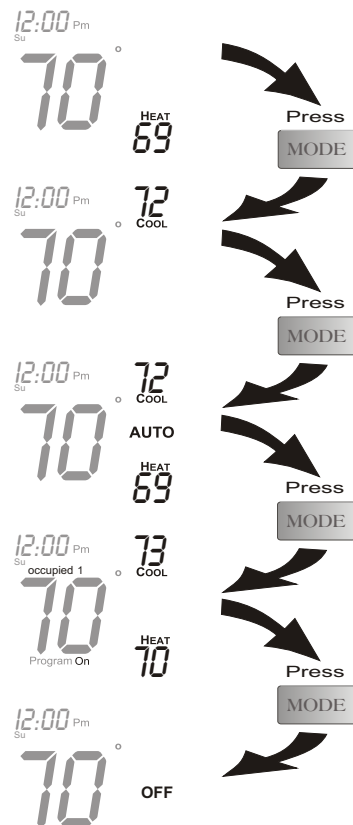
## Basic Operation

### *Select Desired Temperature*

*12:00* Pm
Mo
°
72
**COOL**

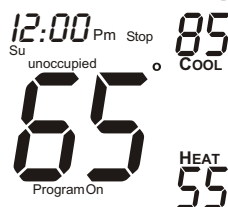70°
**AUTO**

**HEAT**
69

In any mode, adjust the desired Set Temperature with

▲

▼

buttons.

Pressing the up/down buttons in <u>Auto</u> mode will adjust **both** the heat and cool set temperatures simultaneously.

Pressing the up/down buttons in Heat **or** Cool modes will adjust only the heat **or** cool set temperature.

---

### *Override*

**Press**
**OVERRIDE** ◯

*12:00* Pm  Stop
Su
unoccupied
°
85
**COOL**

65

**HEAT**
55
Program On

↗ *12:00* Pm

*0:30* Pm
Su
occupied 1
°
74
**COOL**
Override

73

**HEAT**
72
Program On

During programmed, unoccupied periods a press of the Override button will force the thermostat into Occupied 1 comfort settings, temporarily.

With each successive push of the Override button, the override timer will add 30 minutes, until the maximum of 4 hours is reached. Then the next press will zero out the override timer, returning to unoccupied if there are no further button presses.
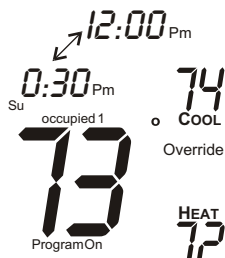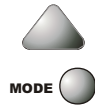
When in Override, the Override icon and the Occupied 1 icon appear on the display.

The time of day clock alternates with the time remaining in override.

During Override, the setpoints are adjustable, provided the keypad is not locked.

Page 7

*Press the Mode button. While holding the Mode, press the Up button for 2 seconds to enter time period programming.*

MODE

---

Select the <u>maximum #</u> of occupied periods to be used on any one day. Typically 1.

(1,2 or 3)

Occupied 1

Press

MODE

---

Adjust the cooling setpoint for occupied 1.

(35 - 99°)

Occupied 1

**74**
**Cool**

Press

MODE

---

Adjust the heating setpoint for occupied 1.

(35 - 99°)

Occupied 1

**74**
**Cool**

**Heat**
**72**

Press

MODE

---

Adjust the cooling setpoint for unoccupied periods.

(35 - 99°)

unoccupied

**85**
**Cool**
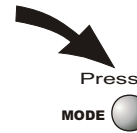
Press

MODE

Continued

Adjust the heating set-point for unoccupied periods.

(35 - 99)

unoccupied

HEAT
55

Press

MODE

---

Select the day for Occupied 1.

(MoTuWeThFr, Sa, Su)

MoTuWeThFr
Occupied 1

Press

MODE

---

Adjust the start time for occupied 1.

7:00 Am Start
MoTuWeThFr
Occupied 1

Press

MODE

---

Adjust the stop time for occupied 1.

6:00 Pm Stop
MoTuWeThFr
Occupied 1

Press

MODE

---

*On*

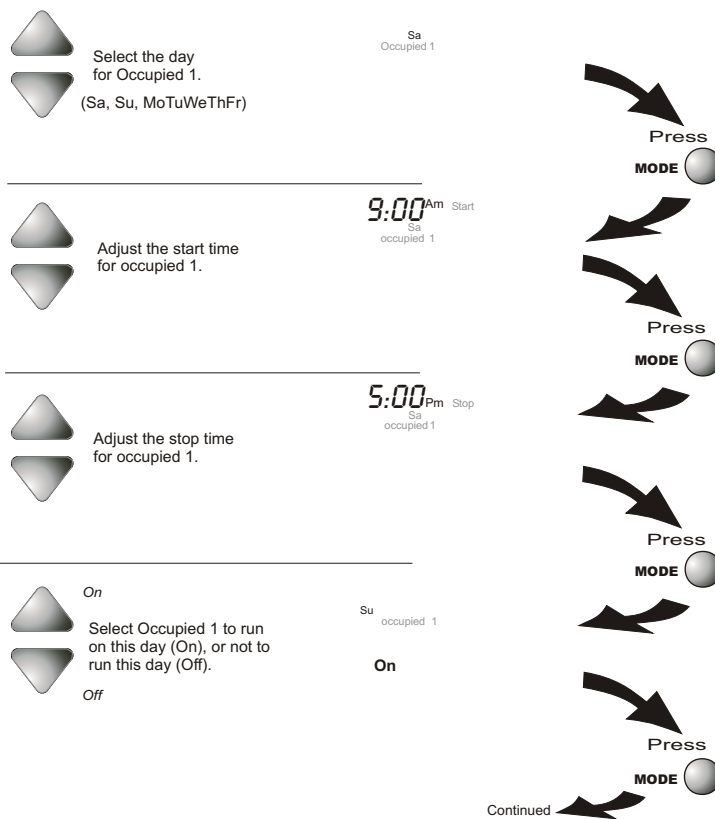Select Occupied 1 to run on this day (On), or not to run this day (Off).

*Off*

MoTuWeThFr
Occupied 1

**ON**

Press

MODE

Continued

Select the day
for Occupied 1.

(Sa, Su, MoTuWeThFr)

Sa
Occupied 1

Press

MODE

Adjust the start time
for occupied 1.

*9:00*Am  Start
Sa
occupied 1

Press

MODE

Adjust the stop time
for occupied 1.

*5:00*Pm  Stop
Sa
occupied 1

Press

MODE

*On*

Select Occupied 1 to run
on this day (On), or not to
run this day (Off).

*Off*

Su    occupied 1

**On**

Press

MODE

Continued

Su     occupied  1

Select the day
for Occupied 1.

Press

MODE

*9:00*Am  Start
Su     occupied  1

Adjust the start time
for occupied 1.

Press

MODE

*5:00*Pm  Stop
Su     occupied  1

Adjust the stop time
for occupied 1.

Press

MODE

*On*

Select Occupied 1 to run
on this day (On), or not to
run this day (Off).

Su     occupied  1

*Off*

**ON**

*To Exit Programming*

MODE

***Press the Mode button. While holding the Mode,
press the Up button for 2 seconds to exit
time period programming.***

## PROGRAMMING NOTES

❋ If only 1 Occupied period is selected in step 1 on page 8, Occupied 2 & 3 programming steps are skipped.
Further, if only 2 occupieds are selected, Occupied 3 programming steps are skipped.

❋ Heat & Cool setpoints for Occupied 1 are the same for every day of the week. Heat & Cool setpoints for Occupied 2 & 3 can be adjusted differently for each day of the week, if desired.

❋ **If the start time is set later in the day than the stop time,** the program will run from the start time to midnight and from midnight to the stop time on the same day. *For example: 9:00pm start, 8:00am stop, on MTWTF. In this example the program will run from 12:00am MTWTF to 8:00am MTWTF and again from 9:00pm MTWTF to 12:00pm MTWTF.*

❋ The Unoccupied settings take effect at all times when:
(**1**) the program is on **and** (**2**) the current time is outside a preset occupied period.
For this reason start and stop times aren't necessary for unoccupied.

❋ If the **same** start and stop times are programmed in for an occupied period, then it will run 24 hours.

❋ If one occupied period starts and stops within another occupied period, the lower occupied # has priority.
*For example: If Occupied 3 is programmed to be "on" 24 hours, and Occupied 2 is programmed to run that day, then Occupied 2 settings will take over from occupied 3 between Occupied 2 start and stop times.*
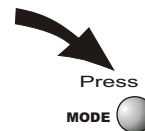
## Advanced Setup

**Press the Mode button. While holding the Mode, press the Override button for 5 seconds to enter Setup screens.**

MODE

OVERRIDE

*NOTE: Each step # is located at the top right corner of the display for easy reference.*

12:00 Am    Setup    *1*

Adjust the time of day clock.

*Tip: To change hours quickly, press and hold the override button in and press the up or down buttons.*

Press

MODE

Mo    Setup    *2*

Select the day of the week.

Press

MODE

*Display On*

Select Display operation, Full Display (On), or Minimal display (Off).

*Display Off*

DSP    Setup    *3*

ON

Press

MODE

*Fan On*

Select fan operation, Fan On, or Fan Auto.

*Fan Off*

Setup    *4*

AUTO

Press

MODE

Fan

Continued

Page 13

## Advanced Setup

Adjust the deadband from 1 - 6 degrees.

db *Setup* 5

2

Press

MODE

---

Adjust the minimum *difference* between cooling & heating setpoints.

(0 - 6°)

dIF *Setup* 6 COOL

2 HEAT

Press

MODE

---

Select the cycles per hour limit.
d=cycles per hour limit defeated.
d1=d + defeat 5 min. Compressor lockout.

(d, d1, 2 - 6)

*Setup* 7

6

CY

Press

MODE

---

*On*

Select the display back-light always **On**, or **Off** after 8 seconds.

*Off*

*Setup* 8

LI° **ON**

Press

MODE

Continued

## Advanced Setup

*C*

Select thermostat
operation in degrees
**F**ahrenheit or **C**entigrade.

*F*

Setup *9*

F°

Press

**MODE**

Setup *10*

0
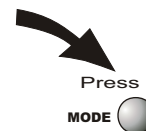
**MODE**

**OVERRIDE**

*B*

Select the reversing
valve polarity for
Heat Pump, O or B.

O
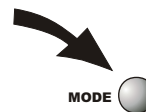
*Press the Mode button.
While holding the Mode, press the Override
button for 2 seconds to leave the Setup
screens. If no buttons are pressed, the
display will leave the setup screens after
30 seconds.*

## Advanced Setup

### Advanced Setup Table

| Step # | Description | Range | Factory Default |
|--------|-------------|-------|-----------------|
| 1 | Time of day clock set | 24 hour | 12:00 Am |
| 2 | Day of the week | Sun - Sat | Monday |
| 3 | Display Blanking | Off / On | On |
| 4 | Fan operation | Auto / On | Auto |
| 5 | Deadband or Temperature swing | 1 - 6 | 2 |
| 6 | Forced minimum difference heat/cool | 0 - 6 | 2 |
| 7 | Cycles per hour | d, d1, 2 - 6 | 6 |
| 8 | Thermoglow backlight | Off / On | On |
| 9 | Fahrenheit or Centigrade | F / C | F |
| 10 | Reversing Valve polarity | O / B | O |

✽ CLOCK BACKUP - In the event of a power loss, the thermostat internal clock will continue to keep proper time for a minimum of 48 hours without external power or batteries.

✽ 2 STAGE OPERATION - The 2nd Stage of heat or cool is turned on when (**1**) the 1st Stage has been on for a minimum of two minutes, **and** (**2**) the temperature spread from the setpoint is equal to or greater than: *the setpoint plus the deadband, plus 2 degrees.*

**Heating**       **Cooling**

| | 2 degrees | Dead Band | | Dead Band | 2 degrees | |

2nd Stage turn on   1st Stage turn on   Heat Setpoint   Cool Setpoint   1st Stage turn on   2nd Stage turn on
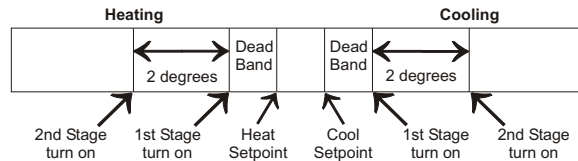
✽ MINIMUM HEAT/COOL SETPOINT DIFFERENCE - The Heat and Cool setpoints will not be allowed to come any closer to each other than the value set in Advanced Setup *step # 6, on page 14*.  This minimum difference is enforced during Auto changeover and Program On operation.

✽ ENERGY SAVING SMART FAN - If Fan On is selected, *page 13, step 4*, the fan will run continuously at all times, except in Off, **and** will only run if there is a heating or cooling demand in Unoccupied periods.

✽ OVERRIDE - As explained on *page 7*,  pressing the Override button during a programmed, Unoccupied period will force the thermostat into Occupied 1, temporarily, up to 4 hours. If the Override button is pressed during an Occupied period, the thermostat will be forced into Unoccupied and the occupied # *(1,2 or 3)*, it was forced out of will be turned off, only for that day.
During Override periods the setpoints may be adjusted, but they will not be remembered after Override ends.

## About Advanced Features & Operation

✻  EMERGENCY HEAT - To turn on Emergency Heat press in the
     Override button.  While holding the Override button press
     the Up button for 2 seconds.  The Cool setpoint display
     will read 'EH'.

Press for
Emergency Heat   →

OVERRIDE

*12:00* Pm
Su

*73*°

EH
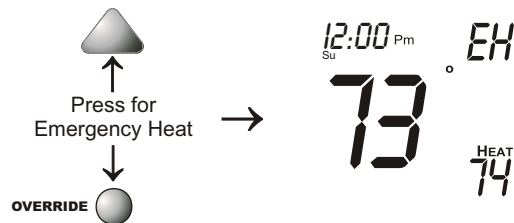
HEAT
*74*

During Emergency Heat the thermostat will turn
on the fan and the 2nd stage of heat, when there is a
demand for heat, locking out the 1st stage compressor.
Exiting Emergency Heat is the same as entering.  During
Emergency Heat only OFF and HEAT are available.

✽   KEYPAD LOCK - To prevent unauthorized use of the thermostat, the front panel buttons may be disabled.  To disable, or 'lock' the keypad, press and hold in the Mode button.  While holding the Mode button in, press the Up and Down buttons in together.  The **Locked** icon will appear on the display.

Press all 3 for
Keypad Lockout

→

*12:00* Am
Su     unoccupied      o  COOL
                          Locked

*70*

HEAT
*55*
ProgramOn
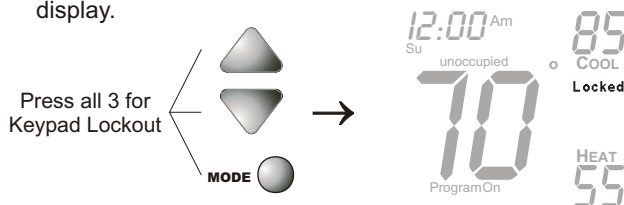
To *unlock* the buttons, again press and hold the Mode button.  While holding the Mode button in, press the Up and Down buttons in together.  The **Locked** icon will disappear from the display.

✽   DISPLAY BLANKING

The thermostat display may be configured in advanced setup, *page 13, step 3,* to always be visible as normally expected, or may be selected Off.  When selected Off, only the time of day will appear until a button is pressed.  When a button is pressed the full, normal display will appear then revert to the time of day only, after roughly 10 seconds.

✽   DUAL SETPOINT BEHAVIOR - The adjustable setpoint range is:  35 - 99 degrees in Fahrenheit and 7 - 35 degrees in Centigrade.  When in the modes Heat or Cool, this adjustable range is unhampered.
When adjusting any Auto mode, including programming Occupied and Unoccupied periods, the thermostat will not allow the Heat setpoint to get closer to the Cool setpoint than the value programmed as the minimum difference in *step 9, page 14.*
When entering the Auto mode from Cool, the Heat and Cool setpoints will remain spread apart by the amount that they were adjusted, prior to entering Auto.
For example:  If the Cool setpoint was set to 80 while in the Cool mode and the Heat setpoint was adjusted to 70 while in the Heat mode,  upon entering the Auto mode the Heat and Cool setpoints would be 80 and 70.  **Both** setpoints would then move up and down together, (in this example spread by 10 degrees), by pressing the up or down buttons.
To move the Heat and Cool setpoints closer together, enter the Cool or Heat mode by pressing the Mode button, then adjust the setpoint(s) closer together.  <u>Heat</u> is limited to how close it can come to Cool by *step 9, page 14*.

## About Advanced Features & Operation

✳  FACTORY DEFAULTS - If, for any reason it is desirable to
        return all stored settings back to the factory default
        settings, press the Mode button.  While holding the Mode
        button in, press the Down button for 2 sec.  All icons will
        appear.  Press and hold in the Override button until **Fd**
        appears.  This resets all factory settings. **To calibrate
        room temperature,** press the Mode button once more.
        At this point use the Up and Down buttons to calibrate
        room temperature, if needed.  Press the Mode button to
        return to normal operation.  ***NOTE CAUTION ON PAGE 1.***

✳   LOCKING COVER
     w/Tamper Proof Screws



Page 21

# Warranty